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<110> BLUMENFELD, Marta
BOUGUELERET, Lydie
CHUMAKOV, Ilya
COHEN, Daniel
ESSIOUX, Laurent

<120> Genes, proteins and biallelic markers related to central...

<130> GENSET.045AUS

<141> 1999-10-12

<150> 60/106,457

<151> 1999-10-30

<150> 60/103,955

<151> 1998-10-12

<150> 60/132,277

<151> 1999-05-03

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<170> Patent.pm

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<212> DNA

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<222> 3076..4643

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<223> 8-58-301 : polymorphic base C or T

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<120> Genes, proteins and biallelic markers related to central...

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<223> insertion of AGAG in SEQID4

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 Gln Tyr Phe Glu Val Thr Gln Phe Asn Cys Arg Lys Thr Ile Pro Cys
 325 330 335
 aag caa tat tgc ttg gag gtg cag aca agg tgt cca ttc ata ttg ccc 1114
 Lys Gln Tyr Cys Leu Glu Val Gln Thr Arg Cys Pro Phe Ile Leu Pro
 340 345 350 355
 gac aat gac gaa gtc att tac gga ggc ctc tcc agc ttc atc tgc aca 1162
 Asp Asn Asp Glu Val Ile Tyr Gly Gly Leu Ser Ser Phe Ile Cys Thr
 360 365 370
 ggg ctc tac gaa acc ttc cta acc aat gat gaa ccc gaa tgc tgt gac 1210
 Gly Leu Tyr Glu Thr Phe Leu Thr Asn Asp Glu Pro Glu Cys Cys Asp
 375 380 385
 atc agg agc gag gag caa acc gca ccc aga ccc aaa gga acc gtg gac 1258
 Ile Arg Ser Glu Glu Gln Thr Ala Pro Arg Pro Lys Gly Thr Val Asp
 390 395 400
 aga aga gac tcc tgt ccc agg aca tcg ctc aca gtg tcc tcg gcc act 1306
 Arg Arg Asp Ser Cys Pro Arg Thr Ser Leu Thr Val Ser Ser Ala Thr
 405 410 415
 aga ctg tgc ccc ggc cgg ctg aag ctg tgt gta ctc gtc ctc att ctc 1354
 Arg Leu Cys Pro Gly Arg Leu Lys Leu Cys Val Leu Val Leu Ile Leu
 420 425 430 435
 ctc cac aca gtg ctc acg gcc tcc gca gcg cag aac tcc acg gga ctg 1402
 Leu His Thr Val Leu Thr Ala Ser Ala Ala Gln Asn Ser Thr Gly Leu
 440 445 450
 ggc ctg ggt ggc ctc ccc acg ctc gag gac aac tcc acc cgg gag gac 1450
 Gly Leu Gly Gly Leu Pro Thr Leu Glu Asp Asn Ser Thr Arg Glu Asp
 455 460 465
 tga gcgcagccag gcgcgtgcgc agagcgcagg gctgggcagg gacacgcgct 1503
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 tggcacagag cagcagtgac ccaccgggga tgctcacctg ctgcagcccg ggaactgaac 1563
 ccaccggggt gctctaccct tggacttctc gcaaggcctg tgggtaacat tcaacaagat 1623
 gggcccgate cccaacatgg acacagccgc agctttttgc cgactaaaag gctgcaagtg 1683
 actcagtttc tcacaccatt ttatacactg tgttttaacg tttggagggtt ttctttgctt 1743

tcagttcgggt ttgggtttat tttccgtttt taaacttttt ttttttttg

1791

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 <213> mus musculus

<400> 7

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 20 25 30
 Glu Arg Ala Gln Lys Trp Arg Leu Ser Leu Ala Ser Leu Leu Phe Phe
 35 40 45
 Thr Val Leu Leu Ser Asp His Leu Trp Phe Cys Ala Glu Ala Lys Leu
 50 55 60
 Thr Arg Thr Arg Asp Lys Glu His His Gln Gln Gln Gln Gln Gln
 65 70 75 80
 Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Arg
 85 90 95
 Gln Gln Gln Arg Gln Arg Gln Gln Gln Arg Gln Arg Gln Gln Glu Pro
 100 105 110
 Ser Trp Pro Ala Leu Leu Ala Ser Met Gly Glu Ser Ser Pro Ala Ala
 115 120 125
 Gln Ala His Arg Leu Leu Ser Ala Ser Ser Ser Pro Thr Leu Pro Pro
 130 135 140
 Ser Pro Gly Gly Gly Gly Gly Ser Lys Gly Asn Arg Gly Lys Asn Asn
 145 150 155 160
 Arg Ser Arg Ala Leu Phe Leu Gly Asn Ser Ala Lys Pro Val Trp Arg
 165 170 175
 Leu Glu Thr Cys Tyr Pro Gln Gly Ala Ser Ser Gly Gln Cys Phe Thr
 180 185 190
 Val Glu Ser Ala Asp Ala Val Cys Ala Arg Asn Trp Ser Arg Gly Ala
 195 200 205
 Ala Ala Gly Glu Glu Gln Ser Ser Arg Gly Ser Arg Pro Thr Pro Leu
 210 215 220
 Trp Asn Leu Ser Asp Phe Tyr Leu Ser Phe Cys Asn Ser Tyr Thr Leu
 225 230 235 240
 Trp Glu Leu Phe Ser Gly Leu Ser Ser Pro Ser Thr Leu Asn Cys Ser
 245 250 255
 Leu Asp Val Val Leu Thr Glu Gly Gly Glu Met Thr Thr Cys Arg Gln
 260 265 270
 Cys Ile Glu Ala Tyr Gln Asp Tyr Asp His His Ala Gln Glu Lys Tyr
 275 280 285
 Glu Glu Phe Glu Ser Val Leu His Lys Tyr Leu Gln Ser Asp Glu Tyr
 290 295 300
 Ser Val Lys Ser Cys Pro Glu Asp Cys Lys Ile Val Tyr Lys Ala Trp
 305 310 315 320
 Leu Cys Ser Gln Tyr Phe Glu Val Thr Gln Phe Asn Cys Arg Lys Thr
 325 330 335
 Ile Pro Cys Lys Gln Tyr Cys Leu Glu Val Gln Thr Arg Cys Pro Phe
 340 345 350
 Ile Leu Pro Asp Asn Asp Glu Val Ile Tyr Gly Gly Leu Ser Ser Phe
 355 360 365

Ile Cys Thr Gly Leu Tyr Glu Thr Phe Leu Thr Asn Asp Glu Pro Glu
 370 375 380
 Cys Cys Asp Ile Arg Ser Glu Glu Gln Thr Ala Pro Arg Pro Lys Gly
 385 390 395 400
 Thr Val Asp Arg Arg Asp Ser Cys Pro Arg Thr Ser Leu Thr Val Ser
 405 410 415
 Ser Ala Thr Arg Leu Cys Pro Gly Arg Leu Lys Leu Cys Val Leu Val
 420 425 430
 Leu Ile Leu Leu His Thr Val Leu Thr Ala Ser Ala Ala Gln Asn Ser
 435 440 445
 Thr Gly Leu Gly Leu Gly Gly Leu Pro Thr Leu Glu Asp Asn Ser Thr
 450 455 460
 Arg Glu Asp
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<210> 8
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<220>
 <223> oligonucleotide g713LF1

<400> 8
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23

<210> 9
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
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<400> 9
 gtatttgccg agaccatttt aagatt

26

<210> 10
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> oligonucleotide 713.LF1.5.1

<400> 10
 actgtctgat tccacctatt atggag

26

<210> 11
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 <212> DNA
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<220>

<223> oligonucleotide g713.LF1.5.1n

<400> 11

tgattccacc tattatggag agcac

25

<210> 12

<211> 20

<212> DNA

<213> Artificial Sequence

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<223> oligonucleotide g713RACE5R1

<400> 12

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<210> 13

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide g713RACE5R-49

<400> 13

gggcatagca atcattc

17

<210> 14

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide g713CTGLF132

<400> 14

ggctgtgcgt tcccaaata

20

<210> 15

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide g713RACE3N

<400> 15

aaaaatgttt cggtccagtc tgttaaga

28

<210> 16

<211> 29

<212> DNA

<213> Artificial Sequence

<220>
<223> oligonucleotide g713RACE3Nn

<400> 16
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29

<210> 17
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<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide SG1polyA

<400> 17
tttttttttt tttgacagag

20

<210> 18
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide SG1LR100

<400> 18
tttgccattt agcttagcag tacca

25

<210> 19
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide g713.PU

<400> 19
aatattctta acagactgga ac

22

<210> 20
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide g713.RP

<400> 20
ctttatagct atgaaatttc cc

22

<210> 21
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide g34301.PU

<400> 21
ctgatcactt gtggttctgc gccg 24

<210> 22
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> oligonucleotide g34301.RP

<400> 22
aggactcccc catgctcgcc ag 22

<210> 23
<211> 23
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<220>
<223> oligonucleotide SG1LR1102

<400> 23
aaaatactgg gaacagagcc agg 23

<210> 24
<211> 18
<212> DNA
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<220>
<223> oligonucleotide SG1LF790

<400> 24
gcacttagag cgcggggt 18

<210> 25
<211> 15
<212> DNA
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<220>
<223> oligonucleotide SG1LF834

<400> 25
gccggaggca gccca 15

<210> 26
<211> 17
<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide moCTGR1511

<400> 26

tgtcctcgag cgtgggg

17

<210> 27

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide moCTGLR20

<400> 27

cggaggaggg gatacggaaa ttaaacc

27

<210> 28

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide moCTG1440

<400> 28

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25

<210> 29

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide moCTG5RACE1

<400> 29

tcacagtgtc ctcggccact

20

<210> 30

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> oligonucleotide moCTG5RACEn

<400> 30

tcctccacac agtgctcacg

20

<210> 31

<211> 983

<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> 14
<223> n=a, g, c or t

<400> 31
aaaaaaaaaa aaanaacaaa aacaaaacat gaaacaggaa gacaggaaa atccatttga 60
cagagtactt gacacaggag agagaagaaa tactcatgta tctgaaagta ttcaaagggg 120
gagtgttagg agatgaatta atttaaaaaa tgagtaagag taaaatagtt taaagttaga 180
ccctgaggaa ctccagggaa gacaaagtaa cacaaggaa aagcaatgtt agccactgcc 240
taactttcct cagggtcatg tgtgcctcgc cataattatg taaacactta cattgttaaa 300
acgaaattcg gagaactagt ttgagtaaag gggaaaagaa agtatgttat tcatgtcggg 360
gttggaaata tgtgataggt tgaaattctc aatttcctaa ttggaaatca ttaagtcata 420
ctgaaacctg aaaattcaag aactgacaac acaattgatg ttgagatatg gaatttggtg 480
cctgatgaaa gattagaaaa ttattaaaaa caatttcctc tgggtggtgc tacaagatgg 540
aagaagaaa gacagaaaag ccttcataat caggtagacg ctttgacttt ttaagtggta 600
tgcctatatg cctttaaaaa acaactcaat ttaaaagaaa attagagat gctaacagcc 660
gatttaaaga aaatttagta aaatattcaa ttgtataaag atacacaaaa tattggttat 720
ctacatgata gcaaagatga attaagggat ggggataaaa ctcttctcaa taacacaaaa 780
attaaaataa aacataattc atatatttag aaatatcatt acagaaatat gttgaacttg 840
tattaacagc ctctcctcaa aggtagcatg gagaatcatg caaacttaat ttggagatac 900
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<210> 32
<211> 450
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 298
<223> 99-15663-298 : polymorphic base C or T

<220>
<221> misc_binding
<222> 275..321
<223> 99-15663-298.probe

<220>
<221> primer_bind
<222> 279..297
<223> 99-15663-298.mis

<220>
<221> primer_bind
<222> 299..317
<223> 99-15663-298.mis complement

<220>
<221> primer_bind

<222> 1..18
<223> 99-15663.pu

<220>
<221> primer_bind
<222> 430..450
<223> 99-15663.rp complement

<400> 32
tcccaccttc ttctaaacgt gttgcttcaa tacgttgata ggtgaggaca cttaaaaatt 60
agactttata gaaatagggt tttttttgtt tacatatata gttcttttgg tatcatatat 120
ttagcctctt tctaaaattt attttttgat actgaaggga gaaataggga gttattaatc 180
aacaggcatt aatttttagtc aagcaaaata aataagctgt agcgatctgc tctgtaacat 240
tgtacctaca gccacaattt atatgttggt cacttaaaaa tgtgttagat ctcatagyaa 300
ctcttcttac cacaataaag taaaaattct gaaacaataa gtgaatacct aaataataca 360
aacaaatata atattgtagt tttgggcact taataaatga cagcctcatt tctcaattag 420
agatcatcac aagttagaca gatgacgat 450

<210> 33
<211> 476
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 398
<223> 99-15665-398 : polymorphic base A or G

<220>
<221> misc_binding
<222> 375..421
<223> 99-15665-398.probe

<220>
<221> primer_bind
<222> 379..397
<223> 99-15665-398.mis

<220>
<221> primer_bind
<222> 399..417
<223> 99-15665-398.mis complement

<220>
<221> primer_bind
<222> 1..20
<223> 99-15665.pu

<220>
<221> primer_bind
<222> 458..476
<223> 99-15665.rp complement

<400> 33

cgtaaagtgtg	aaaagcatag	cctcttcttg	gaatgttaag	tataaatatc	tgaaatactg	60
ggcttgatat	gtcaacagga	gattgatgga	taaaaataga	attttatata	aaaaacaact	120
ggacatatta	gattgttaac	ttggaagaaa	gaccatattc	aaagaagaaa	acatagtgac	180
taatttcaaa	catttaaagt	cttccctgtg	gaaacaaagg	aatatctttg	ttctaacact	240
tcaaagaaca	gggttaaaaa	atagactcac	cacagagtaa	atgcacaatt	gacaatcgtg	300
aatgaattaa	aaaccaaaca	aaatattttg	tcagctttct	atctatgaaa	ctaagaaaca	360
ggcttcctac	taaggtaatg	aatgtaattc	acagagarca	ttcacgtata	agtttcattc	420
atgtttcaaa	tttcattgat	ttgatcaatg	ggttattcta	ataccctccc	ttattt	476

<210> 34
 <211> 547
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 166
 <223> 99-15672-166 : polymorphic base C or T

<220>
 <221> misc_binding
 <222> 143..189
 <223> 99-15672-166.probe

<220>
 <221> primer_bind
 <222> 147..165
 <223> 99-15672-166.mis

<220>
 <221> primer_bind
 <222> 167..185
 <223> 99-15672-166.mis complement

<220>
 <221> primer_bind
 <222> 1..18
 <223> 99-15672.pu

<220>
 <221> primer_bind
 <222> 533..551
 <223> 99-15672.rp complement

<400> 34						
ccaataccat	aactcctcta	taggacatgg	aagagtatta	tatatgacaa	atgattgcta	60
tgattattat	tatcagtgtt	attattatcc	taatcctaag	taatccaata	aaagaaaaat	120
acatctgtgc	ctgtgcgtat	gtgcacgtgt	gtgcagtcaa	atacaygttg	agtaaaggta	180
aagtctagct	gtattttaatc	aacctacctg	aatcctcagg	aaaaaattct	aaacctagtt	240
taaaacatgt	aaactctaag	ctctctcctt	atagtcagtt	agtagcagca	catcttaaaa	300
tctggtgtga	atattctctt	agttctacat	gagtctaact	aaacagagga	ttattcttag	360
gtgtttgaaa	gagacatatg	tgacactgct	gttttgagaa	caatttaagt	gttgtcttgt	420
catgtacaga	agttctcata	ttacttttaca	taaatggttg	cataattggt	ttatagtaaa	480
taatagactg	tcaatatttc	taggataact	ccaaaacaaa	atttcctaga	mmacattttg	540

aaaaggg

547

<210> 35
<211> 502
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 185
<223> 99-15664-185 : polymorphic base G or T

<220>
<221> misc_binding
<222> 162..208
<223> 99-15664-185.probe

<220>
<221> primer_bind
<222> 166..184
<223> 99-15664-185.mis

<220>
<221> primer_bind
<222> 186..204
<223> 99-15664-185.mis complement

<220>
<221> primer_bind
<222> 1..19
<223> 99-15664.pu

<220>
<221> primer_bind
<222> 483..502
<223> 99-15664.rp complement

<220>
<221> misc_feature
<222> 54
<223> n=a, g, c or t

<400> 35
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tggcacgggg cctgatgctg acttgcacaa gggaagcctc ctgtctctga cttccccagg 120
ataattcctg gggaaagtgt gctccctagt gttaagagcg gtttaatggc tggagggttt 180
cagckggctg accaggcaga gaaggagggt gaatcacctc tcagcactct ccacttagac 240
tttgtgtggt cgtcgggtgg tcaaaccttc taactagtgt tattgcagat ttggcattcc 300
agtgcaaaca aaagacagaa acacaatgtt cacatgcttt ccagagatca cctggatatc 360
agatcatttg attttcaagt aagtcgaaac cttggtggaa atcattaact atcctgttta 420
tgaccaaaaa ataaaatccc aaatttcttc tcttcatttc ttacctgctt taaaattgta 480
tccaaagcgt graagtaaaa ga 502

<210> 36

<211> 455
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 205
<223> 99-5919-215 : polymorphic base A or G

<220>
<221> misc_binding
<222> 182..228
<223> 99-5919-215.probe

<220>
<221> primer_bind
<222> 186..204
<223> 99-5919-215.mis

<220>
<221> primer_bind
<222> 206..224
<223> 99-5919-215.mis complement

<220>
<221> primer_bind
<222> 1..19
<223> 99-5919.pu

<220>
<221> primer_bind
<222> 435..455
<223> 99-5919.rp complement

<400> 36
ctacagcaat gcagatttca attctgccat tgaattccca gacatattcg tcatcccat 60
tttcatcccc caccaccctg ccattttctt cgtgttaact tgttttcctg actcacagaa 120
atcacctttt cctgtataca tttttaggat gtcagacttt attctaataga tttctcctag 180
ttgcccccca aaattgtatt ctacrgtgtg attttaaagc tgaattttca agatgatatt 240
tcatatctat attttcacaa gcttttcttc tatgaatggt attgtcagct gtcagggtgt 300
gagatggtac ttgatactac attctttcca agctgttgcc tgaatcggtt taagacaaag 360
tcattactag gctgtaaact gttgctctgc aaaattgagc agcacgtatt taaccactca 420
tacttcttag ctctccaaca ctttgagtca ataga 455

<210> 37
<211> 450
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 157
<223> 99-5862-167 : polymorphic base C or T

<220>
<221> misc_binding
<222> 134..180
<223> 99-5862-167.probe

<220>
<221> primer_bind
<222> 138..156
<223> 99-5862-167.mis

<220>
<221> primer_bind
<222> 158..176
<223> 99-5862-167.mis complement

<220>
<221> primer_bind
<222> 1..20
<223> 99-5862.pu

<220>
<221> primer_bind
<222> 430..450
<223> 99-5862.rp complement

<400> 37
aatcaaggta gagatgtatg agaaatagcc ggttaaagaa acagcattac tttcagacta 60
tctttttatgtt gaaatacacg tgggggaaacc agaaggtgaa accccttagg agatggatat 120
aggataactaa aatctgagtt agaaaaatgtt gagcatyagc accttacgtg tcatgctaag 180
atagtgaatg agactgcaca ggaattgcat gcagtttaac ggaaaaagaa gtcgaaagat 240
aaatttcctag aacactaaca ccgagttatg ggaggagaaa tatcctgcac aggtcactct 300
gggagacatg tcaattgttt agccaatatc cattttaactc atctttcttc ctaatgaaaa 360
ccgaatttgga agaagcaggt agtgcccctg gctagaaata tgaaccttcc cagcttctct 420
catgcactga actgacaaag ttcaggtctg 450

<210> 38
<211> 403
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 292
<223> 99-16032-292 : polymorphic base A or C

<220>
<221> misc_binding
<222> 269..315
<223> 99-16032-292.probe

<220>
<221> primer_bind
<222> 273..291
<223> 99-16032-292.mis

<220>
 <221> primer_bind
 <222> 293..311
 <223> 99-16032-292.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-16032.pu

<220>
 <221> primer_bind
 <222> 384..403
 <223> 99-16032.rp complement

<400> 38
 gttgttaccc cacttcttcc ccccagctcc cccttctca cacagttcat gccacatgcc 60
 actctcctgg actactggaa atgcgtcagt ccactctggg ctcatcccat catcccccat 120
 gctgcaacct gagagagagt tgcaagttgc aaatctgac ttgtcaccac cactctccac 180
 actaaatccc tctaatgcct ccccccttct ttttgataa attccttctg cttgcatagc 240
 cactgtggtg gcttctatag catcacttca cactgtggtc acctgccttc tmctcactca 300
 ggaacttctc tccattgaag aagttcttct tcccacatc cagggttct ccactgacag 360
 ttgtatctcc cccataccaa gcccaggtgg tcattctatc cca 403

<210> 39
 <211> 476
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 118
 <223> 99-16038-118 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 95..141
 <223> 99-16038-118.probe

<220>
 <221> primer_bind
 <222> 99..117
 <223> 99-16038-118.mis

<220>
 <221> primer_bind
 <222> 119..137
 <223> 99-16038-118.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-16038.pu

<220>
 <221> primer_bind
 <222> 456..476
 <223> 99-16038.rp complement

<400> 39
 gttgcttatt ctttctctct tctgcagggt ataaaggaat ctgaacacga ctgatatttt 60
 ctttaatttt tagatccaga tatacattgg gtaaaatcta cttcataggt tttcaaarga 120
 gcattcttct gagcaaactc gaaaactctc taaactctat tggtagtga ctctttatct 180
 ttatatgaat ttaaattctt ctagaagtta gataaaactg tggtaaagct acataatact 240
 tttgacatat tttcaagcgt agacaaactt caattaattt gtaagataca ggaagaaaat 300
 ttttccagtt aaaatgtacc tcttggtttc tggagtgtta gcaaccattc acacttacag 360
 ttcaaacagt gcaaccttgt aaaacatata taacttatga agagatcgat atctcttttt 420
 ataaagcaaa caagtaaatt tttccctcaa tccatgattt atttttgtga agtggg 476

<210> 40
 <211> 498
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 133
 <223> 99-5897-143 : polymorphic base A or C

<220>
 <221> misc_binding
 <222> 110..156
 <223> 99-5897-143.probe

<220>
 <221> primer_bind
 <222> 114..132
 <223> 99-5897-143.mis

<220>
 <221> primer_bind
 <222> 134..152
 <223> 99-5897-143.mis complement

<220>
 <221> primer_bind
 <222> 1..18
 <223> 99-5897.pu

<220>
 <221> primer_bind
 <222> 475..492
 <223> 99-5897.rp complement

<400> 40
 aaaagtgttt gccagtcctg tttcttacag agcacagaac tcagatgctc ttataaagat 60
 acaggataaa tcacatcatt tctgctcca tcatcagaat attattatat gatttagatc 120

acttttttaa	aamagaacat	ggacttagta	cagaacaaca	gcaaaagcct	ggggaaggag	180
aggagtgcac	catgaggagt	caatggggag	cagaagccag	tccatttgac	tgatttggtt	240
cgtgtgcaaa	ataattgcta	aataattgca	tatatgtgag	actccgggta	ttttcaaaac	300
cagctggcaa	aattgtgtta	ttctctaccc	tctgctggct	ttcacgggtt	ctctgttctc	360
tctccttttc	ctccattctc	ctcttaccct	aattcctgac	cactgtaatc	caataatcta	420
aggttttagg	atttgatga	ctaaggttac	ccatggaatt	gtttggaaat	gtagacctgt	480
aatggagagg	ggagaaaa					498

<210> 41
 <211> 517
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 360
 <223> 99-13601-360 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 337..383
 <223> 99-13601-360.probe

<220>
 <221> primer_bind
 <222> 341..359
 <223> 99-13601-360.mis

<220>
 <221> primer_bind
 <222> 361..379
 <223> 99-13601-360.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-13601.pu

<220>
 <221> primer_bind
 <222> 500..517
 <223> 99-13601.rp complement

<400> 41						
gttttacttg	acagttacca	agaattgttt	cgcatttaag	aaaattatat	ctttgatggt	60
tccctcatta	atgggtgcctg	gatacccaat	gcaacacacc	tacatcaaac	tgcatTTgta	120
actgttgat	tcataatgat	tctacctaag	atgcaagcat	acggcatcat	tgtgccttgt	180
tgtatggata	tgcttgagaa	gtcacatgct	gaaatacata	tattttaaat	ttgacagtat	240
ctcctacaat	atTTtcttta	tattatagta	aggtattaca	ttacagttta	aaacttatga	300
ctataagcag	gtgatattat	ctatgaattt	catgtgaaat	tagcaaagg	acagtctcar	360
atgTTtgctg	tataaagtgt	atttgaagcc	tgatagggtt	gagaaacact	cagctacagt	420
aagtaaaaac	agctctctta	gtggttgctt	tgTTtgagaag	atcttgaaaa	caaggttgaa	480
aatacaaaaag	aaactgtgtg	gagTctacaa	agatatt			517

<210> 42
 <211> 533
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 97
 <223> 99-13925-97 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 74..120
 <223> 99-13925-97.probe

<220>
 <221> primer_bind
 <222> 78..96
 <223> 99-13925-97.mis

<220>
 <221> primer_bind
 <222> 98..116
 <223> 99-13925-97.mis complement

<220>
 <221> primer_bind
 <222> 1..20
 <223> 99-13925.pu

<220>
 <221> primer_bind
 <222> 513..533
 <223> 99-13925.rp complement

<400> 42
 catggaagta aaagcatatc ttcattataa gacttctaca caaattatca catctttact 60
 tacagcagct gaaacctgga aacaactcta atgccrctca acagaggaat ggatggataa 120
 agaaaactgtg atgcagtgga atacgactca acgaagatga gactaaaaat aattatactg 180
 agtaaaagaa tccaaacaaa atagagcaaa cactgtgcc aacctgtttat accttactcc 240
 agtaaatgca aactaatata caatgaaaaa aattacttat ttgagaactg gggagaggaa 300
 ggagagggaa aggggtagat aaagaaaaga ggagagatta aaaggagcat aagaaaacct 360
 cagagaataa taggtttgtg gtaaacatta ccgtggtaat gtttttaggg tatattcaca 420
 tgtaaaaact tatccaatta tacattttta atagtgtacag tttagtgtgt cagttatgcc 480
 tctgtaaagt tgatttttaa aaaagtccta ttccaagtym acaatttcac ttg 533

<210> 43
 <211> 480
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 201

<223> 99-13929-201 : polymorphic base A or C

<220>

<221> misc_binding

<222> 178..224

<223> 99-13929-201.probe

<220>

<221> primer_bind

<222> 182..200

<223> 99-13929-201.mis

<220>

<221> primer_bind

<222> 202..220

<223> 99-13929-201.mis complement

<220>

<221> primer_bind

<222> 1..19

<223> 99-13929.pu

<220>

<221> primer_bind

<222> 460..480

<223> 99-13929.rp complement

<400> 43

gggagaatac	taataatgga	agcattactt	ttatTTTTtC	tataaattcc	tctggaaata	60
tgtatttctt	atgtcctaag	gttattaaca	aaaagagaaa	ataatttctg	atttataatt	120
cactttcctt	caaaaaataa	taactcagtg	tctagtaagg	taaagcaaaa	aaagttaaaa	180
gaaccataa	gtttatttta	maatacctac	tcagaagcaa	aactgacttt	ctattaaaaa	240
ttaaaaaaaaa	aagttttctt	attattgttt	tgtttccttg	tttttaggtg	atgggattgt	300
atttgcaact	ctctggtcag	taagtgataa	aatgccattt	ctatgcaccc	acctggcctg	360
tgtgactggg	agaatctctc	tttttattaa	atgtgcttca	agttttaaca	actgactttt	420
gttagtgata	tgatttatct	accctgact	gtcaaacaac	acagatgatt	tgcatatctc	480

<210> 44

<211> 477

<212> DNA

<213> Homo sapiens

<220>

<221> allele

<222> 108

<223> 99-14021-108 : polymorphic base A or G

<220>

<221> misc_binding

<222> 85..131

<223> 99-14021-108.probe

<220>

<221> primer_bind

B1
cont

<222> 89..107
<223> 99-14021-108.mis

<220>
<221> primer_bind
<222> 109..127
<223> 99-14021-108.mis complement

<220>
<221> primer_bind
<222> 1..18
<223> 99-14021.pu

<220>
<221> primer_bind
<222> 460..477
<223> 99-14021.rp complement

B1
cont

<400> 44
tttgttggtta atcgccccctt ttctgcaaca cttgtggggtt agggaaaata attctaaagc 60
aagagcaaag acagagttgg gagatcacca gtgaggttca attttccrtc acattcactc 120
tgctccacac ctcagataat catgtgctta actgcgaaac ttgcttgaca attacagAAC 180
actttctcac ccattactac cttgatcctc acaattctgt ggggtagtag gagcagatgc 240
tgaaattgcc atacgcaaAT cagtgaactg aagcttagag acctccagca ggggcagagg 300
gtcagcggaa actatcccag ggttcagcca acaagaaagt atattggaat cagagtatta 360
aaataagaat aataaaacca actaaaattt accgtgcttt ttatttccac tcagtgccaa 420
caattcttaa cagtgtcagt gatggatccc tgtgccccag gggacagact tcttact 477

<210> 45
<211> 475
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 314
<223> 99-14359-314 : polymorphic base G or C

<220>
<221> misc_binding
<222> 291..337
<223> 99-14359-314.probe

<220>
<221> primer_bind
<222> 295..313
<223> 99-14359-314.mis

<220>
<221> primer_bind
<222> 315..333
<223> 99-14359-314.mis complement

<220>

<221> primer_bind
 <222> 1..18
 <223> 99-14359.pu

<220>
 <221> primer_bind
 <222> 457..475
 <223> 99-14359.rp complement

<400> 45
 ataagggaat ggtgtgaggt gggaccagag gaggctgcac tgagaaagt agagggggcaa 60
 gacctcaggg gaagaaggga gggctgcacg gatgtctcag gcagagcagg cagcaccgga 120
 aaaggtgggg gacactcctt ttggaccagc atataatttg gttaaagcct ctcctgtttc 180
 acctaataata taagcacatt tcaagataaa actactactt tattgtcatc aaatataaaa 240
 gtaatttttt attcagggtt ttctaatact catctataaa ggcatttctt tcccacatgg 300
 catgtgttac aggstgttta acttaaagca attgtaaaag aaaagcctga agaaataagt 360
 ctacaacgat ttacatcgtg tttatttttg tgtcaaaata tatgttaaaa tatacattag 420
 ctatactaag ggaatcaaga gaagatcata attgctctta tgacttggga ttttag 475

<210> 46
 <211> 473
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 316
 <223> 99-14364-415 : polymorphic base C or T

<220>
 <221> misc_binding
 <222> 293..339
 <223> 99-14364-415.probe

<220>
 <221> primer_bind
 <222> 297..315
 <223> 99-14364-415.mis

<220>
 <221> primer_bind
 <222> 317..335
 <223> 99-14364-415.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-14364.pu

<220>
 <221> primer_bind
 <222> 453..473
 <223> 99-14364.rp complement

B1
 con

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<400> 46
gtgttttaat tcaaccacgc tataagatac gaaatgatag aattgctcta gattctctat 60
tggttaaata aggagatatt tgtgctattg ccaataatac atgctgtacc tggataaaacc 120
cctttgggca agttgtgatg caaataactca agaaaatagg ccacatagtt acaacaggac 180
ttacctaatt ccccatggtc atttggtgta ttcagtcagt tgctttcaag cctagggttct 240
tggctcaata ttattacata aactagaatt ttcctattac tattaatttt actttgtatt 300
tttctttata aacttygtac ttattgcttg tcaaatttca gcagaagtac aactcctgag 360
agaataatgc tggctcagag ttttgagatg ataacccttg tctatgaaac tgatgaagtt 420
ggacttaaca acgaacactc cccacagaac tcctgatgct caaatgtggc taa 473

```

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<210> 47
<211> 502
<212> DNA
<213> Homo sapiens

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<220>
<221> allele
<222> 99
<223> 99-15056-99 : polymorphic base C or T

```

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<220>
<221> misc_binding
<222> 76..122
<223> 99-15056-99.probe

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<220>
<221> primer_bind
<222> 80..98
<223> 99-15056-99.mis

```

```

<220>
<221> primer_bind
<222> 100..118
<223> 99-15056-99.mis complement

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<220>
<221> primer_bind
<222> 1..18
<223> 99-15056.pu

```

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<220>
<221> primer_bind
<222> 482..502
<223> 99-15056.rp complement

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<400> 47
caggaaactc acaagaagsc agatttcctt cgagcacctc ctgaataaag aggcaaaggc 60
cttcttaact cttacaattt acaagtggct atgagtgcyt ttatagttcc cataataatt 120
tctccacgta gacttcctaa ataataattt ctctgtttt atattctctg tgcttatggt 180
tatatcaaac aagttaccac ttaatcaaat gccgatttgc attgctcact atgtaacttt 240
aattttcttt gcctcttatt tttggatcct aattctaaaa ctatgatgat ataaattcat 300
ttaggaataa gcttgatgat tagccttctt ttgaaccctt ttgtgtcctt cacaatatat 360
gtttcgatga aacagtgagc aacatttgat ctatgattgt taatagaaaa acaccaatgt 420
ctcaagttat tgtaaacata ggcataattg acctttgggt ctataaatat gtttggtggt 480

```

ccccaaaata cgtctccctt tt

502

<210> 48
<211> 494
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 412
<223> 99-15229-412 : polymorphic base A or G

B1
<220>
<221> misc_binding
<222> 389..435
<223> 99-15229-412.probe

<220>
<221> primer_bind
<222> 393..411
<223> 99-15229-412.mis

<220>
<221> primer_bind
<222> 413..431
<223> 99-15229-412.mis complement

<220>
<221> primer_bind
<222> 1..20
<223> 99-15229.pu

<220>
<221> primer_bind
<222> 476..494
<223> 99-15229.rp complement

<400> 48
ctgtcattga gaaatgctac caataatact tagagaattt gatacaactc agtctgaaaa 60
agctaagatt agcagaacag agctgtctcc aaatatattga agaactattt tatttaaggg 120
attggaccca tttttgtatg tagttccaga ggagcagatg gtgaccactg tccaggcaga 180
tgtgtctcaa tgtaaggaca acatctgtaa tattaataat tagaatgtat cctgtaattt 240
tctctctacc cttggaaacc agtcgagatc cagagtcttt cactgggagg cttaaagcct 300
agagcagcct tgggtgctaga ggcggacagg gataatgaac taatcttgaa ccaattcatc 360
catagcaatc tcaatgcttt cgttagctct tataggtatt taatacggcc avaggaatga 420
aggtagtctt gctggtttag aagccctgcc taccacaacc cctacaccac cccatcccct 480
gcatagtctg atgt 494

<210> 49
<211> 485
<212> DNA
<213> Homo sapiens

<220>

<221> allele
 <222> 291
 <223> 99-15232-291 : polymorphic base G or T

<220>
 <221> misc_binding
 <222> 268..314
 <223> 99-15232-291.probe

<220>
 <221> primer_bind
 <222> 272..290
 <223> 99-15232-291.mis

<220>
 <221> primer_bind
 <222> 292..310
 <223> 99-15232-291.mis complement

<220>
 <221> primer_bind
 <222> 1..18
 <223> 99-15232.pu

<220>
 <221> primer_bind
 <222> 467..485
 <223> 99-15232.rp complement

<400> 49
 caatagaaca ggctgctcct ttataattat taatcatagt gtatattaat tcatcatcac 60
 atacgtggct agaaaaaaaaa ttagaacaaa aagatatgtg atatgtaaag gcctacgata 120
 attcagactt ctttgaggag agcttttatt ttattgttat tcttatttta tctcttgta 180
 atataaattg agagaataaa cagacaaaca ttacaaatta gtgattaatt gcatttaaag 240
 cctagttaag actatttaag actattatgc ataatacagg aaaactacct ktattattta 300
 tagtgggtgc cttctgaagg atctgaagga gaatcagttc tatgcctctc tcctcattcc 360
 caggaggtgc ctggcattcc ttggcttgta gacgcatcac cctaattctc acctctgcct 420
 tcacatggtg tcccctgtgt gtgtgttttt gccccatgtg tctcctcttt ttatatggat 480
 gccag 485

<210> 50
 <211> 464
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 347
 <223> 99-15241-347 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 324..370
 <223> 99-15241-347.probe

<220>
 <221> primer_bind
 <222> 328..346
 <223> 99-15241-347.mis

<220>
 <221> primer_bind
 <222> 348..366
 <223> 99-15241-347.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-15241.pu

<220>
 <221> primer_bind
 <222> 444..464
 <223> 99-15241.rp complement

<400> 50
 gttatgggtt gaaaatctct gagttcttgt acatacaaaa attttactgt tgtcacagtt 60
 gaatccttagt ttagatgggt ataggatttt tattcaaaat gcttttactc cataagttta 120
 aaaatattgt tacattttcc tcaagtatct gatgttattg atgagaagtt taattctaata 180
 ttgactcttg ttcccttgta ggtactattt gttttccagt ttgggaagct tacattttctt 240
 aaaattcaca acatataatt tacatactac acaattcttt ttaaagtata caattcaatg 300
 catttagtat gtttttagtac atataactta aattatgtat atacaaratc tctttataat 360
 attttagtaa tatgtagcat attcacaaga ttgttcaacc atcaccactc tctattttcca 420
 gaatcttttc ctccaaaaag aaaccctgaa cactatgatg aata 464

<210> 51
 <211> 550
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 196
 <223> 99-15244-196 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 173..219
 <223> 99-15244-196.probe

<220>
 <221> primer_bind
 <222> 177..195
 <223> 99-15244-196.mis

<220>
 <221> primer_bind
 <222> 197..215

<223> 99-15244-196.mis complement

<220>

<221> primer_bind

<222> 1..20

<223> 99-15244.pu

<220>

<221> primer_bind

<222> 532..550

<223> 99-15244.rp complement

<400> 51

ctgcttctgg ttatgttttc ctaattgcc aatggtaaa aatgagaata atcattgaaa 60
gagaaagcat aaagtagcaa aaatcctttc cagattaaaa aacgaagcaa agcatgtttc 120
ccaagtaata atactctcat cttcctccct aatcctttac cccactacca gaagaagagt 180
aaaatgtccg gatatrtrttg aaggtaaaga tttctccttt taataaaaatt agtcaccttg 240
tacacatcag tagatcttga gaatgaaaag cttttctagt acattcattt caacctataa 300
atgtttgact tttctctgtc attcattttac gacctgtgat cttttcattc cttttcagtt 360
agaatatatt tcaaattttt attgatattt tctatttaac ccatagggtta tttggaaata 420
cattgtttta tttctaatat atttgctttt ttttctactt atttctttt ttcttaattc 480
cacactggtc caaatatatt ctgcatatga tttaatat tttaatat taagttctgt agagactaac 540
cttggtgcct 550

<210> 52

<211> 452

<212> DNA

<213> Homo sapiens

<220>

<221> allele

<222> 404

<223> 99-15252-404 : polymorphic base C or T

<220>

<221> misc_binding

<222> 381..427

<223> 99-15252-404.probe

<220>

<221> primer_bind

<222> 385..403

<223> 99-15252-404.mis

<220>

<221> primer_bind

<222> 405..423

<223> 99-15252-404.mis complement

<220>

<221> primer_bind

<222> 1..18

<223> 99-15252.pu

<220>
 <221> primer_bind
 <222> 433..452
 <223> 99-15252.rp complement

<400> 52
 atgggggcat atagcaaccc tttagaaaca aaactacaaa aggtaagctt gtcttcttgc 60
 atttcctttc tcttactaca tttaacatgg gaggttttct atgtctcaca ttcaaataatt 120
 ctcaactcggg ctgcctaatt tttccctgat tttccatcac tctttatgaa ggcttgctac 180
 tttagaatac acatttttctt aacagaagat aataatcaga agatgtctcc caaatataag 240
 tccaaatctt tcctatcatg ctgtgttctt tggctctttt gactttattt gaagtcagcc 300
 ttgaagggga tagagatagg ctgtatgaag tccacgctga gaagttttgc cctgccctac 360
 ttgtcctgta atatttcatg gatagcccag tggtgattaa accygtgtgt acaggaataa 420
 ccatgagaat ttgttaaaaa tataggctct gg 452

<210> 53
 <211> 477
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 382
 <223> 99-15253-382 : polymorphic base C or T

<220>
 <221> misc_binding
 <222> 359..405
 <223> 99-15253-382.probe

<220>
 <221> primer_bind
 <222> 363..381
 <223> 99-15253-382.mis

<220>
 <221> primer_bind
 <222> 383..401
 <223> 99-15253-382.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-15253.pu

<220>
 <221> primer_bind
 <222> 459..477
 <223> 99-15253.rp complement

<400> 53
 aaaatcaatt cccaacact cattttgtac gctaattttg taagatcctg aaaagtttca 60
 ctatttttatg gtttcatgtg ttacagatga aaaaaaaact agaattcaaa ttttctgagt 120
 ttttttttac aatattttat gattacaaag ttagaagact aagaataaaa tggcctaatt 180

tccataatgt	gagtggtaaa	tgagagcac	tgccctaaag	aaaatatttc	aaaaaattag	240
tcatcttttc	cttaattttt	ttccaaccta	tgatctgttg	aatgagcatt	ttgcatatat	300
aaataaataa	attactttgt	aaataatctt	gactggtttc	tggtgaccac	agtaaccac	360
tgacagcac	agcctgtaat	tyctatgaac	ctagggaaat	gtattttaagt	ttattttttg	420
attacacagg	tcctcattgt	gtaactaaac	attgcataga	atatgccagt	gatgatg	477

<210> 54
 <211> 456
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 392
 <223> 99-15256-392 : polymorphic base C or T

<220>
 <221> misc_binding
 <222> 369..415
 <223> 99-15256-392.probe

<220>
 <221> primer_bind
 <222> 373..391
 <223> 99-15256-392.mis

<220>
 <221> primer_bind
 <222> 393..411
 <223> 99-15256-392.mis complement

<220>
 <221> primer_bind
 <222> 1..18
 <223> 99-15256.pu

<220>
 <221> primer_bind
 <222> 439..456
 <223> 99-15256.rp complement

<400> 54	
cctctctatg	atgcttccta ttaagcaatt ggggaaatgt aataaacaag ggttggtgag 60
catcttcctt	agtgagatgt ttttggaaga attggataat tgagtgaata atagtgagaa 120
actcctgtgt	ctgatgttgc tccatgttgg aatgctttta tgttctcaga gaatgagtca 180
ctgagagcca	attgtgatga tacacaatgg ttttaccag gttggatatg gtcctctgta 240
ctggtagcct	ttaagtgcagt ggcactaatc agtcagtcatt tgtcatgctt tgtgttggtc 300
catcatatgg	tatgccctct tagagaacat cctgattagt ccttagacat cttttcaatt 360
tgaacactgg	ggctcctcat tcgggtaaaa aytatggaca gtcagtgaat ctgttgcaat 420
ggccctcat	agcagattgg atctcaatgc actttg 456

<210> 55
 <211> 501
 <212> DNA

<213> Homo sapiens
 <220>
 <221> allele
 <222> 200
 <223> 99-15261-202 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 177..223
 <223> 99-15261-202.probe

<220>
 <221> primer_bind
 <222> 181..199
 <223> 99-15261-202.mis

<220>
 <221> primer_bind
 <222> 201..219
 <223> 99-15261-202.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-15261.pu

<220>
 <221> primer_bind
 <222> 481..501
 <223> 99-15261.rp complement

<400> 55
 cttctaattcc tttgtttcca cttatatttat ttcattcctc attttatccc ttttttctaa 60
 attccattttt attataactta aggtgctttt aatatgggta tcataactcct gatagtgtta 120
 tttcttttctt agtctttctta tataagcgct atacgttcac attccatctc ctttggttat 180
 ctttccatttt cttcaccgar cctcttttgct ctcttttttt atagctgggt cactcaaaat 240
 gtcttactttt gccatttttg aaattttatt tcattctttt atgtactgaa taaaatttaa 300
 aaataacttta tcatgggtggg aggtaccggt gatgtccaaa taagtgttta tattaattgt 360
 tgggggttttt ttgttttgtgt gtttttttgaa aggttaagaa aatctcattc agaaagtaag 420
 ttgttttaaaa attctggacc aaatttacca cacatcaagc agatacttac caagttgttt 480
 ggtagacatt agcagtattt a 501

<210> 56
 <211> 541
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 432
 <223> 99-15280-432 : polymorphic base C or T

<220>

<221> misc_binding
 <222> 409..455
 <223> 99-15280-432.probe

<220>
 <221> primer_bind
 <222> 413..431
 <223> 99-15280-432.mis

<220>
 <221> primer_bind
 <222> 433..451
 <223> 99-15280-432.mis complement

<220>
 <221> primer_bind
 <222> 1..18
 <223> 99-15280.pu

<220>
 <221> primer_bind
 <222> 521..541
 <223> 99-15280.rp complement

<400> 56
 atgtccatcc atcttgccca gagagagttt ctacaacact tcctctgcaa gccctttccc 60
 tacttgccctc acctattgct ttcctctgtt acgttgattt cccctcactg tttcttccaa 120
 catcttccca cctcagagca tggacacttg ctgctctttc tgtgtcatga tgcgtgtcac 180
 ttgtcccttt cttaatgtct cctccctgag ccaatcttct ccacccccac aacttacgca 240
 cacttacatg tcatattttc cttcatagcc tttaacacca tttgaaatga tatatatattg 300
 attgctttta aaattttctc gtccccccac taaatataaa cttcaggatg gcaagaatgt 360
 agtccattat cttattttctc cagcctccat acttttaaga aaataaattt tggttgtata 420
 agccatccag tyagtggtac ttgggtatag caccctagc aaaagaatac aaaaaaaggg 480
 agaatgtttg caatcatctg tttgaggcta ggaattccca gagagggaaa caaggagtaa 540
 t 541

<210> 57
 <211> 514
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 428
 <223> 99-15353-428 : polymorphic base C or T

<220>
 <221> misc_binding
 <222> 405..451
 <223> 99-15353-428.probe

<220>
 <221> primer_bind
 <222> 409..427

<223> 99-15353-428.mis

<220>

<221> primer_bind

<222> 429..447

<223> 99-15353-428.mis complement

<220>

<221> primer_bind

<222> 1..18

<223> 99-15353.pu

<220>

<221> primer_bind

<222> 495..514

<223> 99-15353.rp complement

<400> 57

tggggaatgga ggtagtagac gatgaggtct ccaccctctg actttgcaga gatgggcaag 60
gccaagtgtt ggaagggctt aaacacacac cggagtattc tgtgagaacc agtggatttc 120
agaggatggc aatgacacca cttgccttct gcctcaggag gataactgat ggccgtgtgt 180
gggatgcact ggagagcaag agctggcttg cagggagacc agctggatga ttttctttca 240
tttattttat tcattcaaca cacattcatc tgggggtcac tctgtgcca aactgggca 300
tttccaaata gtccagatgg cagtaagcat ggttggtgca gtaggaatgg gaaggctggg 360
aggggtatga gaggcattac aaacgggaag tgggagtggc accccagaaa agtctagttt 420
aaggtgcyag tggatgtgtg catgtgtgcg cgggggtgtc tagagggtgg cgggcagctg 480
gaaattgagg tcaagtgctt aaagaacaac tcgt 514

<210> 58

<211> 489

<212> DNA

<213> Homo sapiens

<220>

<221> allele

<222> 150

<223> 99-15355-150 : polymorphic base C or T

<220>

<221> misc_binding

<222> 127..173

<223> 99-15355-150.probe

<220>

<221> primer_bind

<222> 131..149

<223> 99-15355-150.mis

<220>

<221> primer_bind

<222> 151..169

<223> 99-15355-150.mis complement

<220>

BI
con

<221> primer_bind
 <222> 1..18
 <223> 99-15355.pu

<220>
 <221> primer_bind
 <222> 471..489
 <223> 99-15355.rp complement

<400> 58
 taacttctcc gtctctcctt cttagcccat atgtcaataa tgactgaaag tattcatttc 60
 catcttttaa ctgcctattc cagccacctc ccacctccat ctctttcctt ctaagttttc 120
 ttcattcttct actttgggca aaaggaaaty gatgtgtcag acaggcctag ttttgaattc 180
 tggatctgct agcacttctc tgtgtgtcct tggttatatg atatagtctt aaaccttaat 240
 gttcttgctt gtaaaatggg gataataaaa acctcttaac agtgggtgtt tcatgcagct 300
 ttcattacaa acttcctcat tcaaaatctt caatgatttc catttttcac aaaatgaaat 360
 tcaaaatttc tgtagattat tgagacaagt cccctactct tcacctaaat ttatctttta 420
 tttattctct catcattatc aacaactact aggctttgtt gccttgactc cagaggcaaa 480
 aatcttctc 489

<210> 59
 <211> 468
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 227
 <223> 99-15685-227 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 204..250
 <223> 99-15685-227.probe

<220>
 <221> primer_bind
 <222> 208..226
 <223> 99-15685-227.mis

<220>
 <221> primer_bind
 <222> 228..246
 <223> 99-15685-227.mis complement

<220>
 <221> primer_bind
 <222> 1..18
 <223> 99-15685.pu

<220>
 <221> primer_bind
 <222> 449..468
 <223> 99-15685.rp complement

<400> 59
aaacaaaggc acgcagagga taaggcatga gtccaaccag cagcatctcc ctcccgaatg 60
agtacagaaa tgatcaatac tcgaagagaa aaagatgctt tcagtgtgct ttacctgaaa 120
acttccttaa gcagcttcac tttattgtca ggatatcgct ttgtgtttgt atcatctaag 180
aaagctcgcg catatgctag tgggccagca ttgacctaga caaagarcaa agattttcag 240
ttccactagg aagaaaatca ccatgaccat ctgctcagtt tcagtttgca ggactaaaaa 300
agcccgttcg cgtgagctac tcacaatccc tgccttcag gaacttaagc ccaaaaagaa 360
accacaaagc tcaactctgtt gcacaccact tgattccatg atctcagcca tcttcagggc 420
acttgtgatg atggtttact ttatgtaaga agaaaccaat gcttgga 468

<210> 60
<211> 500
<212> DNA
<213> Homo sapiens
<220>
<221> allele
<222> 428
<223> 99-15695-428 : polymorphic base C or T

<220>
<221> misc_binding
<222> 405..451
<223> 99-15695-428.probe

<220>
<221> primer_bind
<222> 409..427
<223> 99-15695-428.mis

<220>
<221> primer_bind
<222> 429..447
<223> 99-15695-428.mis complement

<220>
<221> primer_bind
<222> 1..18
<223> 99-15695.pu

<220>
<221> primer_bind
<222> 481..500
<223> 99-15695.rp complement

<400> 60
atcagccttt gtgaggagga ggccctgcct gctctcctcc tgagctgatg ggtcagtcac 60
accaggacaa aggtctgccc ggggctgtgt gggttcctcc ttcttgagct gcacaccagc 120
atctgctgaa caccttcttg agctcagctc agtgtctcgt ccagagacac tggttccctt 180
ggcttctcag caactctcgg atctgggcct gggcttaacc tcagcgggtg tcttgcccat 240
ttctagggcc tcacaattca gcctcatgtc ttcacctgtg gctcttttgc aaggctcaga 300
aagctctagg gtcagttcca gatgactccc accagcatgc cagtaggagc caccaccccc 360
tctcagccag cgccaccata ttccaggcaa attccaactg acacagactt caaggaacga 420

ttgtagcygt tgttcttgct tcttccaaat ggaagagtgc attattgggg tcccttctag 480
cacgcatttc attccccacc 500

<210> 61
<211> 472
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 310
<223> 99-15703-310 : polymorphic base C or T

<220>
<221> misc_binding
<222> 287..333
<223> 99-15703-310.probe

<220>
<221> primer_bind
<222> 291..309
<223> 99-15703-310.mis

<220>
<221> primer_bind
<222> 311..329
<223> 99-15703-310.mis complement

<220>
<221> primer_bind
<222> 1..18
<223> 99-15703.pu

<220>
<221> primer_bind
<222> 452..472
<223> 99-15703.rp complement

<400> 61
agggcttttg gttataggcg ctgaatttct tctaaagcta acctgactct gatgctagaa 60
gagcccatth aaggaaagaa aaacactttt cattgctcga tcaaagttca tccatttttg 120
aaaagacatc aaaccaagtg tgtgacacca ggcacccata tccttcctct ttcccaccac 180
cccacccctg tcctcagggc agtgacagtg aagcctgggt caggtcccgc tgctgctttt 240
tgaagtggca catgctttat tttcttaaaa agaagtgaga gacaacctat gctacaggag 300
gctctgtgay gtttttctga agtacaaccc cttgctctgc cagggcagct gtaaagggtc 360
taaagagccc tgagaaagga gagaggattt gggaagccga ggaggcagag ggagaccaca 420
tagcacatgg agttctgaaa gggcccaagt ggagacagaa aacgagtcac gt 472

<210> 62
<211> 470
<212> DNA
<213> Homo sapiens

<220>

<221> allele
 <222> 400
 <223> 99-15870-400 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 377..423
 <223> 99-15870-400.probe

<220>
 <221> primer_bind
 <222> 381..399
 <223> 99-15870-400.mis

<220>
 <221> primer_bind
 <222> 401..419
 <223> 99-15870-400.mis complement

<220>
 <221> primer_bind
 <222> 1..21
 <223> 99-15870.pu

<220>
 <221> primer_bind
 <222> 452..470
 <223> 99-15870.rp complement

<400> 62
 gctcaaatgt atcaaacaca gtttctgtgg tcaagttcct ctccttttct aaatttgctt 60
 agaggatctc ataaaacgta actcctctga caagggaacc atttttagcac caacactgca 120
 aaagcttctg tgttcctaag ggaaagatcc tttcctgaat taaatttaac ctcttttagta 180
 ctcccattta gccacctgat aaatccactt gagctatctt ttgggaagag agaggatatct 240
 gggaacaata acacttcctt tttgaacagt ttaataaagc tttgtgagat ttcaagatga 300
 aagataatgt gtaatgctga tagtgccctc caaggctctg cattcatgga tccaattacg 360
 ttttttgtca tggtaaaagc cacagtggat atattaaatr agagtgtggt ttaagaatga 420
 aggcccagga gtctggagat ctggtttcta aggctgactt cacttctgct 470

<210> 63
 <211> 469
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 287
 <223> 99-16321-287 : polymorphic base A or C

<220>
 <221> misc_binding
 <222> 264..310
 <223> 99-16321-287.probe

<220>
 <221> primer_bind
 <222> 268..286
 <223> 99-16321-287.mis

<220>
 <221> primer_bind
 <222> 288..306
 <223> 99-16321-287.mis complement

<220>
 <221> primer_bind
 <222> 1..20
 <223> 99-16321.pu

<220>
 <221> primer_bind
 <222> 451..469
 <223> 99-16321.rp complement

<400> 63
 ctttaggaat atcccttctg atttgaacaa cattttgcta tccaagttct gtctactttt 60
 ttaacaagtt cttgctccgt gtgtctcctt ttgcttggtc tcaagtaagg gagtaacagg 120
 gataaactcc cactccttgg taaatctttc tatcattttt ggaaatctca tccattgtag 180
 taaatgctct taaatcttca tcttcaggcc gtgacttcca tctagcctcc attcacgttt 240
 ccgggtttat gtctgcaatg agcattccgt ggctctacat agatgcmcca ccatacctag 300
 aacccatgta tcccaaactc aattctttct ttcccaggac attacttctt gcacttcctt 360
 agtctatcaa tggcactggt attctcttga ccacttagac ttgaaatttt ggggtttgga 420
 ctctctctgc tcccttgctt tatatgtaat cagacatcaa gtctcaatc 469

<210> 64
 <211> 544
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 194
 <223> 99-16333-194 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 171..217
 <223> 99-16333-194.probe

<220>
 <221> primer_bind
 <222> 175..193
 <223> 99-16333-194.mis

<220>
 <221> primer_bind
 <222> 195..213
 <223> 99-16333-194.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-16333.pu

<220>
 <221> primer_bind
 <222> 524..544
 <223> 99-16333.rp complement

<400> 64
 atttaccctg tctgccttgc aatttcagga tcagtataca tcaaatacaag tgaacaaccc 60
 aggggaattct gccgttacct tttagaaaca gaataaataat taacagagct ttacttcttt 120
 ccaccaagga ggactatatg ttaatacagt aatttacact ggaaaaaata taaatgaaag 180
 ggtttagaac ctcrttaactt taaaaataac ataattcctc ctagaacatt cttttcactt 240
 gtgattctca aagcactttg catttcccag ctattggcag ggctggaatt aggatcaaag 300
 tatcactaaa tggtaggtga aataaatgtg aagctgattt tcaggagtag aggaatggag 360
 tcatcaggcg acttttaaagt taagaatctg ttggagcagc tgccaataaa tcaaggccca 420
 aaggagaaaag ttctttggaa accttgaaat attgtataca tttagataat tattgttgtt 480
 gtcaatgtta acgaaaaaag caataaatca gggagatggc actgatgagt gaggagaaat 540
 agac 544

<210> 65
 <211> 475
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 149
 <223> 99-5873-159 : polymorphic base C or T

<220>
 <221> misc_binding
 <222> 126..172
 <223> 99-5873-159.probe

<220>
 <221> primer_bind
 <222> 130..148
 <223> 99-5873-159.mis

<220>
 <221> primer_bind
 <222> 150..168
 <223> 99-5873-159.mis complement

<220>
 <221> primer_bind
 <222> 1..18
 <223> 99-5873.pu

<220>

<221> primer_bind
 <222> 457..475
 <223> 99-5873.rp complement

<220>
 <221> misc_feature
 <222> 409
 <223> n=a, g, c or t

<400> 65
 gcgtaacaat aagcagggtt agtcgccaca aaacttgaga taagaggaaa actaaaaaag 60
 tctaataaaa tcagtagtct taaaaagatg acatgatagg aagagaagtg ttaaaaaaga 120
 aaaaaaatag gtatgaaaga gagtaacaya taccggaaaa gggataaaat acatcctttg 180
 aaagaacaaa gagttattca aattgaattc ttaatgaatt acttaaacag cagattagat 240
 attgttaaaa agaggaatag ggaattaaat gatatatgtg atgatattac ctagtgtaac 300
 catcaaagat gtattgcaaa tgataaagaa aaaaatgctg ccatggcaat attaatatca 360
 taaaaatata ctttaagaag taaataaatg caactaggaa tagagaaans dvhatgaata 420
 ataatatatta amaaavvgta taacaagtat acataagatg taatatccta aaccg 475

<210> 66
 <211> 511
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 49
 <223> 99-5912-49 : polymorphic base A or G

<220>
 <221> misc_binding
 <222> 26..72
 <223> 99-5912-49.probe

<220>
 <221> primer_bind
 <222> 30..48
 <223> 99-5912-49.mis

<220>
 <221> primer_bind
 <222> 50..68
 <223> 99-5912-49.mis complement

<220>
 <221> primer_bind
 <222> 11..31
 <223> 99-5912.pu

<220>
 <221> primer_bind
 <222> 494..511
 <223> 99-5912.rp complement

<400> 66
 aaatataata gtcaaatacat gttaccatta ggacacatta aaaatgtcra attaccttgg 60
 gaccttatat gaacatatta agataataat gatagtgttc agtgcaatat tcagatcaat 120
 agtttaaacc caaaatattt ataccttcag attagatgta tgcaaatagca ttgattcatg 180
 tgtcttttat ctgttggtta catttgagaa aatatttgag aaatatttca aaatggaatt 240
 tatataaatt taaacacata atgggtttat gtaaaaatat tgctaaatta cattttcccc 300
 ttaattctta tttcttgga acgtgcctta gtcgctgaaa tattcataca ttaacacaat 360
 gaaagaagtg aaccttacta ggctttgact atcagggttg ctgttggttt ttgactattg 420
 tgaaactata gcctgatttc taaatcagga agaaacgtgt attgttggtta atatggacac 480
 atgacatatt tgtctgcctg acttttgatc c 511

<210> 67
 <211> 485
 <212> DNA
 <213> Homo sapiens

<220>
 <221> allele
 <222> 210
 <223> 99-6012-220 : polymorphic base G or T

<220>
 <221> misc_binding
 <222> 187..233
 <223> 99-6012-220.probe

<220>
 <221> primer_bind
 <222> 191..209
 <223> 99-6012-220.mis

<220>
 <221> primer_bind
 <222> 211..229
 <223> 99-6012-220.mis complement

<220>
 <221> primer_bind
 <222> 1..19
 <223> 99-6012.pu

<220>
 <221> primer_bind
 <222> 467..485
 <223> 99-6012.rp complement

<400> 67
 gtcttgactt gttttcctga ggggccaggt tgatttgcat gctcttgagg aaatatacac 60
 gtcttctcag ttttaataat tgactgacag ccctgtggtt tctcaggacc cagtgaagctg 120
 ctgctcccag gtcagtctgc aaaggatgct gggtcccttg tgggtctcatc aaggtaggga 180
 atttcctgat tttagagatt tctttatcck aattttgaag actttccttc acatttctag 240
 gcataaaaaa atgtacagca ctctactgct tggttaacaa atggatagtg atatatctgc 300
 caacaaagac cacatggagt atttcattga ctatcagaga agtttcctcg aaaggcacca 360
 tacttagtgt tttatttcca tgagtgaagg aaaattagtt atttgaagta tttggctgtc 420

tttagttggt tctaaagtag tgctgatttt atatgcccat aatattcata tatacaccca 480
ggata 485

<210> 68
<211> 529
<212> DNA
<213> Homo sapiens

<220>
<221> allele
<222> 89
<223> 99-6080-99 : polymorphic base C or T

<220>
<221> misc_binding
<222> 66..112
<223> 99-6080-99.probe

<220>
<221> primer_bind
<222> 70..88
<223> 99-6080-99.mis

<220>
<221> primer_bind
<222> 90..108
<223> 99-6080-99.mis complement

<220>
<221> primer_bind
<222> 1..18
<223> 99-6080.pu

<220>
<221> primer_bind
<222> 509..529
<223> 99-6080.rp complement

<400> 68
aaatgtgtcc ctgaaaccca tgctatatct aactgaatat tctaattgtct ttgattacaa 60
agccatctct agcaatttaa tacaattayg aaatggaaaa gttggcaaat gcaaaacaat 120
agctcgtgtt caaggtatgt ctttattagg ggaagtttat cgaaacagat gtttatgcta 180
tttcctataa actagattct aaaatatatt attctataaa gatgtattga ctttatatga 240
aaaaattatt gaaaaatcta caagatggtg aaactcttta gaactatatt tctattacaa 300
gtttattttt aatttcaaaa atgtactgca taaatgcagc aaaaccttta ttgtcacata 360
ttaaacaatg tacattattg tgtgcaaatt aaaatttcat taccttaaac caaaaagtga 420
gttgccaga tagtaataaa tttaggctct aaggctgaaa agcgcttgta ttaattactc 480
aactccacca ctattttgcc aaagcagtca cagacaatac gcattcaca 529

<210> 69
<211> 489
<212> DNA
<213> Homo sapiens

<220>
 <221> allele
 <222> 156
 <223> 99-7308-157 : polymorphic base C or T

<220>
 <221> misc_binding
 <222> 133..179
 <223> 99-7308-157.probe

<220>
 <221> primer_bind
 <222> 137..155
 <223> 99-7308-157.mis

<220>
 <221> primer_bind
 <222> 157..175
 <223> 99-7308-157.mis complement

<220>
 <221> primer_bind
 <222> 1..18
 <223> 99-7308.pu

<220>
 <221> primer_bind
 <222> 469..489
 <223> 99-7308.rp complement

<400> 69
 tgtggtctg ataggtgta ctgtccttca cacacagatg tgggaagcca tgatcatcag 60
 ttgcattatt cctgaggggc aatgcattcc agttacatag aaccagtttc tacgtttcag 120
 ggtatatgta ttcatggtga caaatttatt cacatyttaa gtaattttta gtaattcaca 180
 ttttaagtaa ttttctgaa tgtgcctcat tggtctctgt gcctcttcag aaaagatgaa 240
 ctaaacactg gcatatgtgt tcagatttca acattccggt gttttcattg tggataattt 300
 ctgtcccata tttttgtgta aagtttagaca ataaagtgtt aatattctgg cgtcggcaca 360
 ttttcttttc tgataaataa caattcacat atctttttta aatatcagag aatatagtaa 420
 ccaatttcca attctttttt caccatgtat ctattggagt tttaaaatga ctaatactaa 480
 ggcaactat 489

<210> 70
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> sequencing oligonucleotide PrimerPU

<400> 70
 tgtaaaacga cggccagt 18

<210> 71
 <211> 18

B1
Cont <212> DNA

<213> Artificial Sequence

<220>

<223> sequencing oligonucleotide PrimerRP

<400> 71

caggaaacag ctatgacc

18
